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1. A method of transmitting variable length messages on a network from a source having a source address to a destination having a destination address, said method including the steps of:

   segmenting each message into a plurality of fixed length slots including a first slot, continuing slots, and a last slot, each of said slots including a header field which includes a source identifier field, which is substantially shorter than said destination address, and a message segment;

   providing a source identifier code in the source identifier field, each source identifier code being uniquely associated with the message to be transmitted;

   entering said destination address in the message segment of said first slot;

   transmitting the slots on the network; and

   controlling reassembly of slots at the destination in accordance with the source identifier code of slots received at the destination.

2. A method as claimed in claim 1, including the step of providing the type field in the header field of each slot, and coding into the type field a first, second or third code representing a beginning of message, a continuation of message and an end of message respectively and controlling the reassembly of received slots at the destination in accordance with the first, second and third code.

3. A method as claimed in claim 2, wherein the method includes the step of storing message segments associated with a single message in a buffer at the destination.

4. A method as claimed in claim 3, wherein if said first code is detected at the destination, the source identifier code is inputted to a comparator and if said second code associated with a subsequently received slot is detected the source identifier thereof is also inputted to the comparator to check for a match, and if a match occurs the message segment of the subsequently received slot is stored in said buffer.

5. A method as claimed in claim 4, wherein if said third code is detected a reassembled message in the buffer is outputted from the buffer.

6. A method as claimed in claim 2, including the step of coding into the type field a fourth code representing a single segment message and if said fourth code is detected in a slot received at the destination, the message segment thereof is stored in a single segment buffer.

7. A method as claimed in claim 5, including the step of providing multiple comparators and buffers at the destination so as to enable simultaneous receipt of a plurality of messages each having its own source identifier code, the message segments of each message being stored in a single buffer.

8. A method as claimed in claim 1, including the step of concurrently transmitting two or more messages from the source to the destination on the network.

9. Apparatus for transmitting variable length messages on a network from a source having a source address to a destination having a destination address in fixed length slots, said apparatus including:

   a segmentation machine for segmenting each message into a plurality of fixed length slots including a first slot, continuing slots, and a last slot, each of said

slots including a header field which includes a source identifier field which is substantially shorter than said destination address, and a message segment,

coding means for providing a source identifier field   5
including a source identifier code which is uniquely associated with the message to be transmitted,

means for entering said destination address in the message segment of said first slot, and   10

a reassembly machine located, in use, at the destination, said reassembly machine including control means for controlling reassembly of slots in accordance with the source identifier codes of the slots.]

[10. Apparatus as claimed in claim 9, wherein said   15 coding means provides a type field in the header field of each slot and provides a first, second or third code representing a beginning of message, a continuation of message and an end of message, respectively, and wherein the control means is responsive to said first,   20 second and third codes.]

[11. Apparatus as claimed in claim 10, wherein said reassembly machine includes detecting means for detecting in the header fields of the received slots the presence of the third code and for detecting a match between the destination address in the slot and the destination address of the destination, and wherein if there is   5 an address match, the detecting means copies the source identifier code into a comparator means.]

[12. Apparatus as claimed in claim 11, wherein the reassembly machine includes a plurality of said comparator means to enable concurrent receipt of slots of different messages.]   10

[13. Apparatus as claimed in claim 12, including means inputting the source identifier codes of received slots to said plurality of comparator means to thereby enable matching of slots having the same source identifier   15 codes.]

[14. Apparatus as claimed in claim 13, including a plurality of buffers for the message segments of the slots and a buffer selector circuit which selects a particular buffer for receipt of all message segments of slots having   20 the same source identifier code whereby reassembled messages are stored in said buffers.]

Claim 15 (currently amended) A method of
transmitting variable length messages on a network from a
source to a destination, said method comprising

segmenting each message into a plurality of fixed length
slots, each of which slots includes a header field and a
message segment,

providing a source identifier field in the header field of
each slot, said source identifier field including a source
identifier code that is uniquely associated with the message
to be transmitted,

providing a type field in the header of each slot,

coding into the type field, a code selected from a first
code, a second code, and a third code, respectively
representing a beginning of a message, a continuation of a
message, and an end of a message,

transmitting the slots on the network, and

controlling the reassembly of received slots at the
destination in accordance with said source identifier code,
the first code, the second code, and the third code,

storing message segments associated with a single message in
a buffer, and further comprising providing the source
identifier code to a comparator in response to detection of
said first code at said destination, and

in response to detection of the second code associated with
a subsequently received slot providing the source identifier
thereof to the comparator to check for a match, and

storing the message segment of the subsequently received
slot in said buffer in response to detection of a match.

Claim 16 (previously amended) A method as claimed in
claim 15, further comprising outputting the reassembled slots
in the buffer from the buffer as a reassembled message in
response to detection of said third code.

Claim 17 (currently amended) A method of
transmitting variable length messages on a network from a
source to a destination, said method comprising
    segmenting each message into a plurality of fixed length
slots, each of which slots includes a header field and a
message segment,
    providing a source identifier field in the header field of
each slot, said source identifier field including a source
identifier code that is uniquely associated with the message
to be transmitted,
    providing a type field in the header of each slot,
    coding into the type field, a code selected from a first
code, a second code, and a third code, respectively
representing a beginning of a message, a continuation of a
message, and an end of a message,
    transmitting the slots on the network, and
    controlling the reassembly of received slots at the
destination in accordance with said source identifier code,
the first code, the second code, and the third code, and
further comprising
    coding, into the type field, a fourth code representing a
single segment message, and
    if said fourth code is detected in a slot received at the
destination, storing the message segment thereof in a single
segment buffer; and further comprising providing multiple
comparators and buffers at the destination so as to enable
simultaneous receipt of a plurality of messages, each having
its own source identifier code, and
    storing the message segments of each message in respective
buffers.

Claim 18 (currently amended) Apparatus for
transmitting variable length messages on a network from a
source to a destination in fixed length slots, said apparatus
including;

a segmentation machine for segmenting the messages into fixed length slots, each of which includes a header field and a message segment, said segmentation machine including coding means

for providing a source identifier field in the header of each slot, said source identifier field including a source identifier code that is uniquely associated with the message to be transmitted, and

for providing a type field in the header field of each slot, and

for providing a code selected from a first code, a second code, and a third code representing, respectively, a beginning of a message, a continuation of a message and an end of a message; and

a reassembly machine located, in use, at the destination, said reassembly machine including control means for controlling reassembly of the slots in accordance with respective source identifier codes of the slots, said control means being responsive to said source identifier code, said first code, said second code, and said third code, and wherein the message includes a destination address field and wherein the segmentation machine is arranged to transmit the destination address field in the message segment of the first slot of the message.

Claim 19 (previously amended) A method for the connection-oriented transfer of variable-length messages in fixed-length slots from a source node having a source address to a destination node having a destination address, the method comprising:

segmenting each message into a plurality of fixed-length slots including a first slot, continuing slots and a last slot, each of the slots including a header field and a message segment;

providing, in the header field of each of the slots, a source identifier code associated with the message,

providing a type field for holding a code in the header of each slot,

coding into the type field, a code selected from a first code, a second code, and a third code, respectively representing a beginning of a message, a continuation of a message, and an end of a message,

transmitting the slots from the source node; and

controlling reassembly of the message on the basis of information in the header field of slots received at the destination node;

storing, in a buffer at the destination node, message segments associated with a single message, and further comprising

providing, to a comparator, the source identifier code of the first slot received at the destination node;

providing, to the comparator, the source identifier code of each subsequently received slot; and

storing the message segment of the subsequently received slot in the buffer in response to an occurrence of a match between the source identifier code of the first slot and the source identifier code of subsequent slots.

Claim 21 (previously amended) The method as claimed in claim 19, further comprising outputting a reassembled message from the buffer in response to detection of the third code.

Claim 22 (previously amended) The method as claimed in claim 19, further comprising providing multiple comparators and buffers at the destination node to enable simultaneous receipt of a plurality of messages, each having its own source identifier code, and

storing message segments from each message in a separate buffer.

Claim 22 (previously amended) An apparatus for the
connection-oriented transfer of variable-length messages in
fixed-length slots from a source node, having a source
address, to a destination node, having a destination address,
the apparatus comprising:

a segmentation machine for segmenting each message into a
plurality of fixed-length slots including a first slot,
continuing slots, and a last slot, each of the fixed-length
slots including a header field, and a message segment, the
segmentation machine being located, in use, at the source
node;

a coder for providing, in the header field of each slot,

a source identifier field for holding a source
identifier code associated with the message to be transmitted,
and

a type field, for holding a code selected from a first
code, a second code, and a third code, respectively
representing a beginning of a message, a continuation of a
message, and an end of a message, and

a reassembly machine for controlling reassembly of slots
into the message in accordance with information in the header
field, the reassembly machine being located, in use, at the
destination node

wherein the reassembly machine further comprises a selector
for checking the third code and for providing source
identifier codes to a comparator for comparison with
subsequently received source identifier codes.

Claim 23 (previously amended) The apparatus as
claimed in claim 22, wherein the reassembly machine further
comprises a plurality of comparators for enabling concurrent
receipt of slots associated with different messages.

Claim 24 (previously amended) The apparatus as claimed in claim 35, further comprising means for providing source identifier codes of received slots to the plurality of comparators, thereby enabling the comparators to match slots having the same source identifier codes.

Claim 25 (previously amended) The apparatus as claimed in claim 24, further comprising:

a plurality of buffers for the message segments of the slots, and

a buffer selector circuit for selecting a particular buffer for receipt of all message segments of slots having the same source identifier code.

Claim 26 (previously amended) The apparatus as claimed in claim 27, wherein the reassembly machine comprises a controller and the controller is configured to output a reassembled message from the buffer in response to detection of a third code, the reassembled message being associated with the source identifier code of the slot containing the detected third code.